

REMARKS

The Office Action has been carefully reviewed. Reconsideration and allowance of the claims in light of the foregoing amendments is respectfully requested. A petition and fee for a two-month extension of time is submitted herewith. Also included with this response is an Information Disclosure Statement with fee.

The Office Action reiterated that this application contains claims directed to the following patentably distinct species of the claimed invention: Species A: Claims 1-5, drawn to a base with a layer of $\text{SrTi}_x\text{Ru}_{1-x}\text{O}_s$ upon the base; Species B: Claims 6-13, drawn to a metal base with a layer of MgO upon the base and a layer of $\text{SrTi}_x\text{Ru}_{1-x}\text{O}_s$ upon the MgO; and, Species C: Claims 14-20, drawn to a metal base including one or more intermediate layers, a layer of MgO upon the one or more intermediate layers, a layer of $\text{SrTi}_x\text{Ru}_{1-x}\text{O}_s$ upon the MgO, and a layer of HTS upon the $\text{SrTi}_x\text{Ru}_{1-x}\text{O}_s$.

Applicant was required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, the Office Action noted that no claims were generic.

Applicant was advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over

the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with Bruce Cottrell on May 15, 2005, a provisional election was made with traverse to prosecute the invention of Species C, claims 14-20. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-13 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicants hereby confirm the telephonic election to prosecute the invention of species C, Claims 14-20. The traversal is hereby withdrawn. Each of claims 14-20 is readable thereon Species C.

Claim 16 stands rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Office Action noted that claim 16 recites the limitation "said layer of a mixture of strontium titanate and strontium ruthenate" in line 2. There is insufficient antecedent basis for this limitation in the claim. The limitation is clearly intended to refer back to the buffer layer of $\text{SrTi}_x\text{Ru}_{1-x}\text{O}_3$ in claim 14; however, claim 14 does not refer to this layer as a "mixture of strontium titanate and strontium ruthenate" and further as the claim allows for x to be 1, the layer of claim 14 can be strontium titanate and is not limited to being a mixture as described in claim 16.

Applicants have amended claim 16 to correct and overcome this rejection. No other comment is believed necessary.

Claims 14, 15, and 18 stand rejected under 35 U.S.C. 102(b) as being anticipated by Miller et al. (6410487). The Office Action stated that Miller et al. teaches (see Fig. 3) a superconductor including a meter substrate, a first ceramic layer which may be MgO (see Col. 4, lines 46-50 and Col. 5, lines 14-18), a second ceramic layer which may be strontium titanate (STO), and a superconductor layer which may be YBCO (Col. 3, lines 2-3).

As Applicants have amended claim 14 to limit the buffer layer to $\text{SrTi}_x\text{Ru}_{1-x}\text{O}_3$ where $0 < x < 1$, the claim no longer reads on Miller et al., which contains no suggestion of a blended layer of strontium titanate and strontium ruthenate as is represented by the term $\text{SrTi}_x\text{Ru}_{1-x}\text{O}_3$ where $0 < x < 1$. Accordingly, applicants submit that claims 14, 15

and 18 as amended are not anticipated by Miller et al. The withdrawal of the rejection of claims 14, 15 and 18 over Miller et al. is urged.

Claims 14, 15, 18, and 20 stand rejected under 35 U.S.C. 102(e) as being anticipated by Holesinger et al. (U.S. Patent No. 6,716,545). The Office Action noted that the applied reference has a common assignee and 3 common inventors with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

The Office Action stated that Holesinger et al. teaches a substrate, one or more intermediate layers, and a superconducting layer (generally in Col. 2, lines 7-10). Holesinger et al. teaches specifically that the superconductor is generally YBCO (Col. 3, lines 6-7), the substrate can be metal (Col. 3, lines 17-19), that there is an IBAD MgO layer on the substrate (Col. 3, lines 51-54), and that one or more layers may be deposited on the MgO layer including strontium titanate (Col. 4, lines 30-31 and 45-48). Holesinger et al. further teaches in example 4 the specific combination of a Ni alloy substrate, IBAD-MgO layer, copper-doped strontium titanate layer deposited at 775°C (which is "about 800°C"), and YBCO layer (Example 4, Col. 7, lines 20-40).

Applicants submit that Holesinger et al. teaches and suggests only strontium titanate layers, and does not teach or suggest the present invention, i.e., a buffer layer of $\text{SrTi}_x\text{Ru}_{1-x}\text{O}_3$ where $0 < x < 1$. While Holesinger does suggest copper-doped strontium titanate layers, there is no suggestion of a strontium titanate/strontium ruthenate combination as is represented by the formula $\text{SrTi}_x\text{Ru}_{1-x}\text{O}_3$ where $0 < x < 1$. Accordingly, applicants submit that claims 14, 15, 18 and 20 are not anticipated by Holesinger et al. The withdrawal of the rejection of claims 14, 15, 18 and 20 over Holesinger et al. is urged.

Claims 14-16, 19, and 20 stand rejected under 35 U.S.C. 103(a) as being obvious over Jia et al. (U.S. Patent No. 6,756,139) in view of Bruchhaus (WO 03/021656). The Office Action noted that the applied reference has a common assignee and 3 common inventors with the instant application. Based upon the earlier effective U.S. filing date of

the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(1)(1) and § 706.02(1)(2).

The Office Action stated that Jia et al. teaches a Ni-alloy substrate, an IBAD-MgO layer, a strontium ruthenate (SRO) layer, and a YBCO layer (see Fig. 1). Although Jia et al. teaches that the SRO layer has many properties and characteristics ideal to this architecture, Jia et al. does not teach that the layer may be $\text{SrTi}_x\text{Ru}_{1-x}\text{O}_3$.

Bruchhaus teaches that when using SRO in ferroelectric applications, problems arise including formation of undesirable compounds, such as RuO_2 , SrO , and SrCO_3 , upon exposure to the atmosphere and annealing and that undesirable properties may result (page 2, line 15 through page 3, line 8). Bruchhaus therefore substitutes SRO enriched with TiO_2 in place of SRO to avoid the problems discussed (page 3, lines 15-21).

The Office Action concluded that it would have been obvious to modify the superconductor architecture of Jia et al. by enriching the SRO layer with some TiO_2 because Bruchhaus teaches some problems are associated with SRO in similar processing and applications and that the addition of TiO_2 alleviates these problems.

Applicants submit that Bruchhaus fails to teach or suggest a layer of $\text{SrTi}_x\text{Ru}_{1-x}\text{O}_3$ where $0 < x < 1$. Rather, Bruchhaus teaches only the addition of titanium dioxide (TiO_2) to strontium ruthenate (SRO). The term $\text{SrTi}_x\text{Ru}_{1-x}\text{O}_3$ is well recognized by those skilled in the art to mean a mixture of strontium ruthenate and strontium titanate. Thus, the combination of Jia et al. (U.S. No. 6,756,139), which teaches the use of strontium

ruthanate, and Bruchhaus, which teaches addition of titanium dioxide to strontium ruthenate, does not arrive at the present invention. Accordingly, applicants submit that claims 14-16, 19 and 20 are not obvious in view of Jia et al. in view of Bruchhaus. The withdrawal of the rejection of claims 14-16, 19 and 20 over Jia et al. in view of Bruchhaus is urged.

Claims 14-17, 19, and 20 stand rejected under 35 U.S.C. 103(a) as being obvious over Jia et al. (U.S. Patent No. 6,800,591) in view of Bruchhaus (WO 03/021656). The Office Action noted that the applied reference has a common assignee and 3 common inventors with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another", (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.32(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(1)(1) and § 706.02(1)(2).

The Office Action stated that Jia et al. teaches a Ni-alloy substrate, an IBAD-MgO layer, a strontium ruthenate (SRO) layer, and a YBCO layer (see Fig. 1). Jia et al. further teaches that an additional buffer layer, which may be CeO₂ may be used between the SRO and YBCO layers (Column 4, lines 33-40). Although Jia et al. teaches that the SRO layer has many properties and characteristics ideal to this architecture, Jia et al. does not teach that the layer may be SrTi_xRu_{1-x}O₅.

Bruchhaus teaches that when using SRO in ferroelectric applications, problems arise including formation of undesirable compounds, such as RuO₂, SrO, and SrCO₃, upon exposure to the atmosphere and annealing and that undesirable properties may result (page 2, line 15 through page 3, line 8). Bruchhaus therefore substitutes SRO

enriched with TiO_2 in place of SRO to avoid the problems discussed (page 3, lines 15-21).

The Office Action concluded that it would have been obvious to modify the superconductor architecture of Jia et al. by enriching the SRO layer with some TiO_2 because Bruchhaus teaches some problems are associated with SRO in similar processing and applications and that the addition of TiO_2 alleviates these problems.

Applicants submit that Bruchhaus fails to teach or suggest a layer of $\text{SrTi}_x\text{Ru}_{1-x}\text{O}_3$ where $0 < x < 1$. Rather, Bruchhaus teaches only the addition of titanium dioxide (TiO_2) to strontium ruthenate (SRO). The term $\text{SrTi}_x\text{Ru}_{1-x}\text{O}_3$ is well recognized by those skilled in the art to mean a mixture of strontium ruthenate and strontium titanate. Thus, the combination of Jia et al. (U.S. Patent No. 6,800,591), which teaches the use of strontium ruthenate, and Bruchhaus, which teaches addition of titanium dioxide to strontium ruthenate, does not arrive at the present invention. Accordingly, applicants submit that claims 14-17, 19 and 20 are not obvious in view of Jia et al. in view of Bruchhaus. The withdrawal of the rejection of claims 14-17, 19 and 20 over Jia et al. in view of Bruchhaus is urged.

In view of the foregoing amendments and remarks, claims 14-20 are urged to be allowable over 35 U.S.C. 102 and 103. If the Examiner believes there are any unresolved issues despite this amendment, the Examiner is urged to contact the applicants' attorney undersigned below for a telephonic interview to resolve any such issue. A favorable action is solicited.

Respectfully submitted,

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